

January 2010

## Swan Creek Watershed TMDL Report

### **What are the essential facts?**

- Ohio EPA studied the Swan Creek watershed and found water quality problems at many of the locations measured.
- The watershed can make progress towards restoration with practical, economical actions.
- Improving the streams depends on the participation of the watershed's residents.

**What is the significance of this report?** The Swan Creek Watershed TMDL Report is a tool that will include local ideas from the Maumee AOC Stage 2 Watershed Restoration Plan as well as agency input to help improve and maintain water quality and habitat in the watershed.

**What is a watershed?** A watershed is the land area from which surface runoff drains into a specific body of water.

### **Where is the Swan Creek watershed?**

The Swan Creek watershed is located in northwest Ohio in portions of Fulton, Henry and Lucas counties. It is a sub-watershed of the Maumee River. Swan Creek has its headwaters in Fulton County, northwest of Swanton. The watershed drains 204 square miles.

An estimated 49,000 citizens reside in the Swan Creek watershed year round. The Village of Swanton, with nearly 3,500 people, draws drinking water from Swan Creek. The lower reaches of Swan Creek run through the southern portion of the City of Toledo until joining with the Maumee River in downtown Toledo.

Overall, the land use in the Swan watershed is 55 percent row crop and pasture land, 21 percent urban/residential, and 18 percent forest.

The watershed is home to the Oak Openings Region, which The Nature Conservancy designated as "One of America's Last Great Places" in December 1999.

There are multiple parks and nature preserves located in the watershed that help to preserve the unique natural

habitats found in this area.

To focus its work, Ohio EPA divided the watershed into two areas: the western portion containing the Swan Creek headwaters and the eastern portion draining into the Maumee River (see map on page 2).



*Cairl Creek*

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## How does Ohio EPA measure water quality?

Ohio is one of the few states that measures the health of its streams by examining the number and types of fish and aquatic insects in the water. An abundance of fish and insects that tolerate pollution is an indicator of an unhealthy stream. A large number of insects and fish that are sensitive to pollution indicates a healthy stream. In 2006, comprehensive biological, chemical, and physical data were collected by Ohio EPA scientists. Additional water chemistry data were collected in 2007 at selected locations and at varying stream flows during the winter and spring to support the load reduction models.

The watershed's conditions were compared with state water quality goals to determine which stream segments are impaired, and how much needs to be done to restore good stream habitat and water quality.

partially meet the goals; and 27 percent of sites do not meet goals.

Most sites on Swan Creek and its tributaries that did not meet or partially met water quality goals were impaired because of physical changes to the land and nutrient additions.

Stream channelization, drainage tiles, and loss of floodplains and streamside vegetation have degraded the creeks. When streams are widened and deepened for agricultural drainage, they contribute excess soil to the stream, which destroys habitat for fish and other aquatic life. Soil carried through ditches degrades Swan Creek and the Maumee River.

When trees along the stream banks are removed, the lack of shade allows the water temperature to increase, which decreases the amount of dissolved oxygen available for aquatic organisms. This is

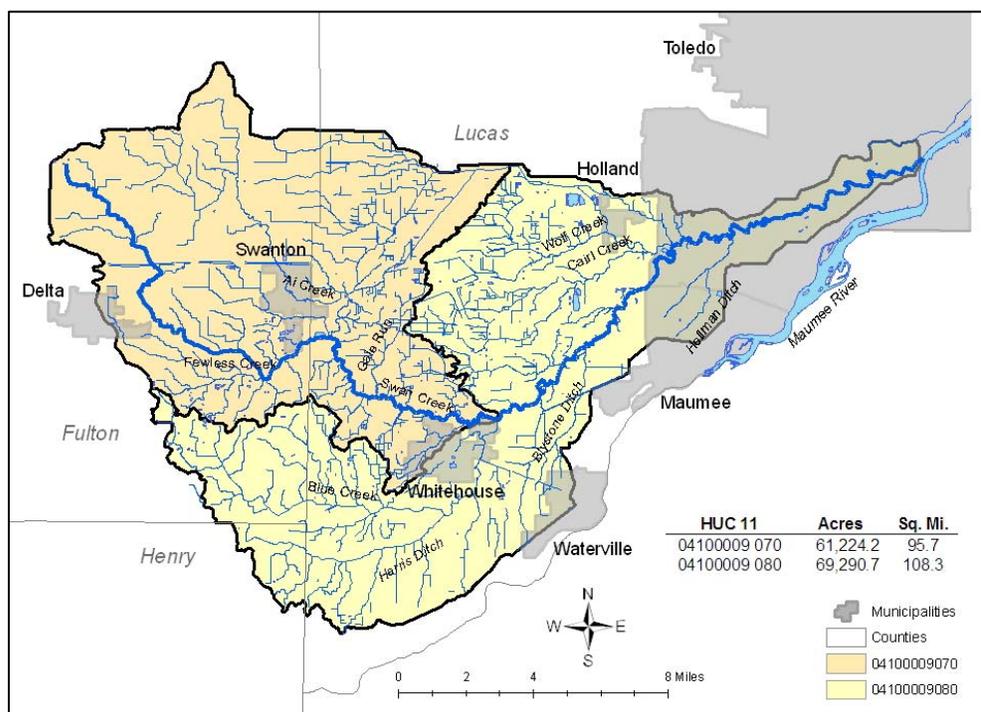
worsened by agricultural runoff and untreated sewage flowing from failing home septic systems and small communities without any wastewater collection or treatment.

Lack of water in small headwater streams, especially in the summer, makes it hard for pollutants to be absorbed and treated by the natural stream ecology. Agricultural drainage practices such as tiling and routine ditch clean-outs change both quantity and quality of water flowing to downstream reaches, making it difficult to support good aquatic life communities.

Excessive nutrients entering streams from agricultural and urban runoff, as well as subsurface tile drains, contribute to the growth of algae in streams, particularly where streamside vegetation is sparse. When the algae die, they break down and use up dissolved oxygen that insects and fish need to live.

## What is the condition of the Swan Creek watershed?

Ohio EPA's study of 27 sites on nine streams in the watershed showed that biological problems are spread throughout the watershed, but there are some nice areas remaining. About 15 percent of the sites fully meet the goals associated with healthy warmwater habitat streams; 58 percent of sites



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The public drinking water supply for Swanton is on the “watch list” for elevated nitrate. Nitrate levels above 10 milligrams per liter can be a human health concern for infants and pregnant and nursing women.

## How will water quality get better?

The Swan Creek watershed is included on Ohio’s list of impaired waters. Under the Clean Water Act, a cleanup plan is required for each impaired watershed. This cleanup plan, known as a total maximum daily load (TMDL) report, calculates the maximum amount of pollutants a water body can receive and still meet water quality standards (goals). The TMDL report specifies how much pollution must be reduced from various sources and recommends specific actions to achieve these reductions.

The TMDL report will provide specific numeric goals for reducing pollutants, including pathogens, phosphorus, nitrate, sediment and improving habitat. Ohio EPA can address some of the Swan Creek problems through regulatory actions, such as permits for wastewater and storm water dischargers. Other actions, such as committing to proper manure management and reduced home sewage system failures, will depend on local residents.

## What actions are needed to improve water quality?

Because there are many reasons why streams in the Swan Creek watershed fail to meet water quality goals, several actions are required to improve the current condition and protect the watershed in the future. The recommendations

### **What are the three most important “fixes” in the watershed?**

#### **◆ Manage subsurface drainage structure to reduce nutrients**

- Develop and improve nutrient management plans
- Install tile drainage control structures where appropriate
- Implement NRCS 633 standards for winter manure application
- Plant winter cover crops to provide manure application sites

#### **◆ Improve erosion and sediment control in all areas**

- Practice conservation tillage on row crop farms
- Install filter strips along all agricultural tributaries
- Implement storm water controls in developing areas and construction sites
- Establish and protect riparian buffers on streams
- Retrofit storm water detention structures in urban areas to reduce first flush chemicals and high flows

#### **◆ Eliminate pervasive bacteria problems**

- Provide or improve manure storage at livestock operations
- Reduce home sewage treatment system failures
- Reduce combined sewer overflows by implementing the long-term control plan for Toledo

should focus on reducing pollutant loads and/or increasing the capacity of the streams to handle the remaining pollutant loads.

Re-establishing a more natural flow regime is important for protecting water quality and aquatic biological communities. The basic principles of providing floodplain connectivity, stable stream morphology and watershed hydrology that approximates natural conditions are applicable to all areas of the watershed. Likewise, stream buffers are appropriate for all land use types in the watershed. Other actions include:

- One privately-owned wastewater treatment plant will be required to monitor total phosphorus and various forms of nitrogen. The Swanton wastewater treatment plant will be required to meet a limit of 1.0 mg/l total phosphorus in its discharge.

- Home sewage treatment systems (HSTSs) should be addressed in rural, urban and developing areas by the county health departments.

- Sediment flowing into streams is a concern in urban, agricultural and developing areas. Controls include reducing erosion with cover crops or conservation tillage; providing buffers along stream banks; identifying concentrated flow paths from agricultural fields and implementing site-specific practices to reduce sources of sediment and nutrient load, retrofitting urban storm water controls to reduce high flows, and adopting measures that maintain stream stability during land disturbance activities such as construction.

- Protecting drinking water sources by reducing nutrient loading from livestock operations and agriculture chemicals is needed. Using

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USDA Natural Resource Conservation Service conservation and management practices is encouraged. Suggestions include adoption of phosphorus index and nitrogen index strategies to address nitrogen leaching and the growing trend of phosphorus concentration buildup on agricultural land.

➤ Residential, commercial and other urban areas can reduce overland loading of nutrients by practicing better timing and rate of fertilizer application.

### Who is responsible for taking action?

Implementation of this report's recommendations will be accomplished by state and local partners, including the voluntary efforts of landowners.

Locally, discussion of actions to restore the watershed has occurred as diverse partners, with coordination from the Partners for Clean Streams (fka. Maumee RAP Committee), have worked to develop a one-stop-shop watershed action plan. This *Maumee Area of Concern (AOC) Stage 2 Watershed Restoration Plan* was designed to help meet the water quality planning needs of five programs. The plan includes issues identified in the TMDL reports for the watersheds of the Maumee AOC.

PCS is serving as a community advocate for the watershed and has become an important force to maintain momentum and sponsor improvement efforts.

### Are any actions already underway?

In addition to the watershed action plan discussed above, several activities indicate a high interest in restoring and protecting the watershed:

- Balanced Growth Initiative is a pilot project in Swan Creek to test the use of incentives as a tool to promote balanced regional planning. Priority areas have been identified for agriculture, development and conservation.

- State Acres for Wildlife Enhancement was made available from USDA Farm Service Agency in 2008. SAFE contracts are 10-15 year contracts for management practices that restore habitats such as wetland complexes, tall grass prairie and oak savanna for declining wildlife species.

- Several opportunities through the Ohio Department of Agriculture have encouraged the preservation of farmland in the watershed. The Clean Ohio Agricultural Easement Purchase Program and Agricultural Security Areas legislation have

been successful in enrolling farms in Fulton and Lucas counties.

- Ohio's Source Water Environmental Education Teams (SWEET) program provides Ohioans with education and guidance on protecting sources of drinking water. There are SWEETs in Fulton and Lucas counties.

- *Wetland and Riparian Inventory and Restoration Plans for Swan Creek & Ottawa River Project*, led by PCS, is to identify and prioritize potential wetland and/or riparian mitigation sites in both the Swan Creek and Ottawa River watersheds. These lists will be used to capture mitigation or penalty funds that become available.

- The *Highland Park Dam Decommissioning and Riparian Enhancement Project* is another project being conducted by PCS. The low-head dam prevents fish from spawning, traps sediments and degrades water quality, but cannot be removed. The project demonstrates dam mitigation without removing the dam. The dam's impact is decreased by building in-stream structures to restore natural water movement, allow spawning fish to swim past the dam and creating a more natural environment.

**Where can I learn more?** The Ohio EPA report containing the findings of the watershed survey, as well as general information on TMDLs, water quality standards, 208 planning, permitting and other Ohio EPA programs, is available at <http://www.epa.ohio.gov/dsw/Home.aspx>.

The draft Swan Creek TMDL report was available for public comment from June 25 through July 27, 2009. The final TMDL report was approved by U.S. EPA on January 6, 2010. The final report is available at <http://www.epa.ohio.gov/dsw/tmdl/index.aspx>.

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